

SYSTEMS AND METHODS FOR VOLUMETRIC
TISSUE SCANNING MICROSCOPY
ABSTRACT OF THE DISCLOSURE

In accordance with preferred embodiments of the present invention, a
5 method for imaging tissue, for example, includes the steps of mounting the tissue on a
computer controlled stage of a microscope, determining volumetric imaging parameters,
directing at least two photons into a region of interest, scanning the region of interest
across a portion of the tissue, imaging a plurality of layers of the tissue in a plurality of
volumes of the tissue in the region of interest, sectioning the portion of the tissue and
10 imaging a second plurality of layers of the tissue in a second plurality of volumes of the
tissue in the region of interest, detecting a fluorescence image of the tissue due to said
excitation light; and processing three-dimensional data that is collected to create a three-
dimensional image of the region of interest.